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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 2

| *Complete if Known* | |
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| Application Number | 10/091,262 |
| Filing Date | 3/05/2002 |
| First Named Inventor | Stewart, Steven L. |
| Art Unit | 1771 |
| Examiner Name | |
| Attorney Docket Number | US.01.012 |

**U. S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (if known) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| VSC | | US- 4873397 | 10-10-1989 | Masujima et al | |
| VSC | | US- 6037657 | 03-14-2000 | Tsurumi et al | |
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|---|---|---|---|---|---|---|
| VSC | | EP 0729182A | 08-28-1996 | Matsushita Electric Inc | | |
| | | DE 19822470A | 12-09-1999 | Litton Precision Product | | |
| | | JP 08250835A | 09-27-1996 | NEC Corp | | |
| | | JP 10335527A | 12-18-1998 | NEC Corp | | |
| | | JP 03036788A | 02-18-1991 | Murata Mfg Co Ltd | | |
| | | JP 04249307 A | 09-04-1992 | Nippon Chemicon Corp | | |

| Examiner Signature | | Date Considered | 12/3/03 |
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|---|---|---|---|---|---|---|
| VSC | | JP 05347474 A | 12-27-1993 | Matsushita Electric Ind | | |
| | | JP 57068053 A | 04-26-1982 | Seiko Epson Corp | | |
| V | | JP 04352491 A | 12-7-1992 | Matsushita Electric Ind | | |
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| Examiner Signature | Vinod Choy | Date Considered | 12/03/03 |
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|---|---|
| USA.01.012 | 10/091262 |
| APPLICANT: STEWART, et al | |
| FILING DATE: March 5, 2002 | GROUP: Unknown |

REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

| Examiner Initial | | Document No. | Date* | Patentee | Date* Cited in Foreign Patent Office |
|---|---|---|---|---|---|
| VLC | AA | 5,930,889 | 8/3/1999 | Klein | |
| | AB | 6084781 | 7/4/2000 | Klein | |
| | AC | 6238223 | 5/29/2001 | Cobbley | |
| | AD | 5061549 | 10/29/1991 | Shores | |
| | AE | 5372883 | 12/13/1994 | Shores | |
| | AF | 6297560 | 10/02/2001 | Capote et al | |
| | AG | 6265776 | 7/24/2001 | Gilleo | |

FOREIGN PATENT DOCUMENTS

| | | Document No. | Country | Date* | Date* Cited in Foreign P.O. | English Translation Yes | No |
|---|---|---|---|---|---|---|---|
| | FA | | | | | | |
| | FB | | | | | | |

OTHER PUBLICATIONS (AUTHOR, TITLE, DATE*, PLACE OF PUBLICATION, PERTINENT PAGES)

| | | | Date* Cited in Foreign P.O. | English Translation Yes | No |
|---|---|---|---|---|---|
| | PA | Adamson, S.J., "CSP and flip chip underfill," Advanced Packaging, June 2001, pp. 37-44. | | | |
| | PB | Johnson, Zane, "BGA Underfills" Advanced Packaging, December 2001, pp. 29-33 | | | |
| | PC | Alpha Microelectronic: Staystik Adhesive for Mag Heads, [internet]Retrieved on December 19, 2001, URL:www.us-tech.com/april99/prods/cmp/cmp016.htm | | | |
| | PD | Center for Advanced Vehicle Electronics, "Ball Grid Array Reliability" [Internet] Retrieved on January 8, 2002, URL:www.eng.auburn.edu/department/ee/cave/bgareliability.html | | | |
| V | PE | Brofman, P.J., "Effect of Underfill Properties on Flip Chip Plastic BGA (FC-PBGA) Reliability," IPC, Session P-MT1/5-(1-5); Presented at Apex 2000, March 14-16, 2000; Long Beach Convention Center, Long Beach, CA | | | |

EXAMINER: Vincent Chung DATE CONSIDERED: 12/3/03

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REFERENCE DESIGNATION — U.S. PATENT DOCUMENTS

| Examiner Initial | | Document No. | Date* | Patentee | Date* Cited in Foreign Patent Office |
|---|---|---|---|---|---|
| VSE | AH | 5783867 | 7/21/1998 | Belke, et al | |
| | AI | 6177728 | 1/23/2001 | Susko, et al | |
| | AJ | 5401536 | 3/28/1995 | Shores | |

OTHER PUBLICATIONS (AUTHOR, TITLE, DATE*, PLACE OF PUBLICATION, PERTINENT PAGES)

| | | | Date* Cited in Foreign P.O. | English Translation Yes | No |
|---|---|---|---|---|---|
| | PF | Adamson, Steven J, "When to Underfill Chip Scale Packages, Design Consideration for Portable Electronic Applications," IPC, Session P-AD2/2-(1-8); Presented at Apex 2000, March 14-16, Long Beach Convention Center | | | |
| | PG | Ghaffarian, R., "Impact of CSP Assembly Underfill Reliability," IPC, Session P-AD2/3-(1-7); Presented at Apex 2000, March 14-16, Long Beach Convention Center | | | |
| | PH | Yaeger, E., "Beyond Flip-Chip, Underfills Enhance CSP Reliability," Chip Scale Review, March 2001, pp. 61-66 | | | |
| | PI | Katze, D., "Evaluations of No-Flow Fluxing Underfills with BGA, CSP and Flip Chip on Board Assemblies," IPC, Session P-MT1/2-(1-7), Presented at Apex 2000, Long Beach Convention Center | | | |
| | PJ | Gilleo, K., "Thermoplastic Die Attach Adhesive for Today's Packaging Challenges," [internet] URL: http://www.cooksonsemi.com/tech_art/staystik.htm | | | |
| | PK | Hannan, N., "Critical Aspects of Reworkable Underfills for Portable Consumer Products," 2001 Electronic Components and Technology Conference, 2001 IEEE, pp 181-187 | | | |
| | PL | Chapter C: Conductive Polymers, Level 1: Introduction [internet], last updated on 2000-09-07; URL:http://extra.ivf.se/ngl/C-polymerBonding/ChapterC.htm | | | |
| | PM | Kristiansen, H., "Adhesives in Electronics," Chalmers Tekniska Hogskola, SINTEF Microelectronics; Presented at International Microelectronics and Packaging Society, Flipchip Technology Workshop, June 18-20, 2001 | | | |
| | PN | Tong, Q., "Novel Fast Cure and Reworkable Underfill Materials," 1999 Electronic Components and Technology Conference, 0-7803-5234-3/99, 1999 IEEE, pp. | | | |

EXAMINER: Vinh B. Chung — DATE CONSIDERED: 12/3/03

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OTHER PUBLICATIONS (AUTHOR, TITLE, DATE*, PLACE OF PUBLICATION, PERTINENT PAGES)

| | | | Date* Cited in Foreign P.O. | English Translation Yes | No |
|---|---|---|---|---|---|
| VSI | PO | Nguyen, L., "Reworkable Flip Chip Underfill-Materials and Processes," Proc. IMAPS International Symposium on Microelectronics, pp. 707-713 (1998). | | | |
| | PP | Gilleo, K., "The Great Underfill Race," [internet] URL:http://www.cooksonsemi.com/tech_art/polysolder.htm | | | |
| | PQ | Gilleo, K., "Wafer-Level Flux Underfill: Underflip," Presented at Apex 2000, March 14-16, 2000; Long Beach Convention Center; Session P-MT1/4-(1-5) | | | |
| | PR | Thorpe, R., "Low Cost Flip Chip Processing Utilizing No Flow Underfill Materials,"Presented at Apex 2000, March 14-16, 2000; Long Beach Convention Center; Session P-AP3/3-(1-8) | | | |
| | PS | Hackett, S., "A No-flow Underfill With Excellent Reliability Performance," IMAPS Flip Chip 2001 Austin, Texas June 18 - 19, 2001 | | | |
| | PT | Suzuki, O., "Research on the Development of Advanced Non Conductive Paste (ANCP), Imaps Conference on Flip Chip Technology in Austin, Texas; June 18-19, 2001 | | | |
| | PU | PRC Research Project Summaries, Flip Chip Assembly Thrust, [internet] Obtained October 31, 2001, URL: www.ee.gatech.edu/research/PRC/research/projsummary/asm.htm | | | |
| | PV | Emerson, J., "Techniques for Determining the Flow Properties of Underfill Materials," 1999 electronic Components and Technology Conference, 0-7803-5234-3/99 | | | |
| V | PW | Fine, P., "Flip Chip Underfill Flow Characteristics and Prediction," 1999 Electronic Components and Technology Conference, 0-7803-5234-3/99 | | | |

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OTHER PUBLICATIONS (AUTHOR, TITLE, DATE*, PLACE OF PUBLICATION, PERTINENT PAGES)

| | | | Date* Cited in Foreign P.O. | English Translation Yes | No |
|---|---|---|---|---|---|
| VSC | PX | The National Technology Roadmap for Electronic Interconnections, Part C-Section 1-Package Style and Physical Attributes, Roadmap 2000/2001; C1-6 | | | |
| | PY | The National Technology Roadmap for Electronic Interconnections, Part D-Section 1-Organic Interconnecting Structures, Roadmap 2000/2001; D1-15 | | | |
| | PZ | Goyal, S, "Role of Shock Response Spectrum in Electronic Product Suspension Design," The International Journal of Microcircuits and Electronic Packaging, Volume 23, Number 2, Second Quarter 2000, pp 182-190 | | | |
| | PAA | Yamaji, Y., "A proposal: the Assessing Method of the CSP's Mechanical Reliability on Board," The International Journal of Microcircuits and Electronic Packaging, Volume 23, Number 1, First Quarter 2000, pp 138-145 | | | |
| | PBB | Goyal, S, "Methods for Realistic Drop-Testing," The International Journal of Microcircuits and Electronic Packaging, Volume 23, Number 1, First Quarter 2000, pp. 45-52 | | | |
| | PCC | Xu, K., "A General Purpose Adhesive for Microelectronic Devices," The International Journal of Microcircuits and Electronic Packaging, Volume 23, Number 1, First Quarter 2000, pp. 78-84 | | | |
| | PDD | Seppala, A, "Flip Chip Joining on GR-4 Substrate Using ACFs," The International Journal of Microcircuits and Electronic Packaging, Volume 24, Number 2, Second Quarter 2001, pp. 148-159 | | | |
| | PCC | Swirbel, T., "Chip Scale Package and Multichip Module Impact on Substrate Requirements for Portable Wireless Products," The International Journal of Microcircuits and Electronic Packaging, Volume 23, Number 3, Third Quarter 2000, pp. 320-324 | | | |
| | PDD | Gilleo, K., "Thermoplastic Adhesives-The Attachment Solution For Multichip Modules," [internet] URL:http://www.cooksonsemi.com/tech_art/staystik.htm | | | |

EXAMINER: Vaes Olus — DATE CONSIDERED: 12/3/03

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OTHER PUBLICATIONS (AUTHOR, TITLE, DATE*, PLACE OF PUBLICATION, PERTINENT PAGES)

| | | | Date* Cited in Foreign P.O. | English Translation Yes | No |
|---|---|---|---|---|---|
| VBC | PEE | Gilleo, K., "New Generation Underfills Power The 2nd Flip Chip Revolution," [internet] URL: http://www.cooksonsemi.com/tech_art/polysolder.htm | | | |
| | PFF | Hung,S.C., "Board Level Reliability of Chip Scale Packages," The International Journal of Microcircuits and Electronic Packaging, Volume 23, Number 1, First Quarter 2000, pp. 118-130 | | | |
| | PGG | Gilleo, K., "Transforming Flip Chip into CSP with Reworkable Wafer-Level Underfill," [internet] URL: http://www.cooksonsemi.com/tech_art/staychip.htm | | | |
| | PHH | Gilleo, K, "The Ultimate Flip Chip-Integrated Flux/Underfill," [internet] http://www.cooksonsemi.com/tech_art/staychip.htm | | | |
| | PII | Preveti, M., "No Flow Underfill Reliability is Here," [internet] URL: http://www.cooksonsemi.com/tech_art/staychip.htm | | | |
| | PJJ | Gilleo, K., "The Chemistry & Physics of Underfill," [internet] URL: http://www.cooksonsemi.com/tech_art/staychip.htm | | | |
| | PKK | Harper, P., "Thermoplastic Die Attach For Hermetic Packaging," The International Journal of Microelectronics and Electronic Packaging, Vol. 17, No. 4, Fourth Quarter, 1994, pp | | | |
| | PLL | Gilleo, K., "Molded Underfill for Flip Chip in Package," [internet] June, 2000; URL: http://www.cooksonsemi.com/tech_art/staychip.htm | | | |

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